Paper/Work

LLNL Postdoc Association Newsletter
March 21, 2012 • Volume 1, Issue 11

A Postdoc Perspective: National Academies Review of Lab Management & Science

By Adam Sorini

The National Nuclear Security Administration (NNSA) was established by Congress in 2000 to manage the nation's nuclear weapons, nuclear navy, and nuclear science laboratories, such as LLNL. Born in part due to alleged security infractions at LANL, the NNSA was originally conceived as an autonomous agency completely separate from the Department of Energy (DOE), but eventually was established as an independent sub-agency within the DOE. The NNSA maintains a site office at LLNL, but contracts out the Lab operations and management to a private sector Limited Liability Corporation (LLC) known as Lawrence Livermore National Security (LLNS).

Recently, Congress expressed concern regarding the ability of the Department of Energy to maintain the overall quality of research at the three national security laboratories: LLNL, LANL, and Sandia [1]. To illuminate the situation, Congress requested that the National Academy of Sciences (NAS) conduct an "even handed and unbiased" assessment of the scientific research being conducted at the Labs as well as the management of scientific research. Management in particular was a concern since, in May of 2007, the NNSA awarded a new management contract for LLNL to the private-sector LLNS LLC, whereas previously the Lab had been managed solely by the University of California. This month the NAS released the first part of its report [2], which deals primarily with the quality of the management of science and engineering at the national security laboratories.

If you've scanned through your "myLLNL Newsline" lately, you might have seen the following summary of the NAS report:

"Scientists and engineers at the three national security laboratories appear committed to their work and core mission of maintaining the country's nuclear weapons stockpile." [3]

While accurately reported, this is only the first half of the first sentence of the NAS press release about the article. The full sentence reads:

"Scientists and engineers at the National Nuclear Security Administration's (NNSA) three national security laboratories appear committed to their work and core mission of maintaining the country's nuclear weapons stockpile, but according to a new National Research Council report, a 'broken relationship' between NNSA and the labs threatens to erode the quality of the scientific research and engineering being conducted there." [4]

What is the nature of the so-called "broken relationship" between the NNSA and the Lab, and how might it affect you as a postdoc? According to the NAS report, the "breakdown of trust" between the NNSA and the Lab has led to, among other problems, an over-emphasis on operational formality. "Operational formality" refers to the process of specifying exactly how tasks are to be accomplished and then forcing strict adherence on each step of the task. Stringent operational formality is commonplace in industry, but undoubtedly serves to dampen the creative spirit of scientific endeavors; reams of paperwork are particularly difficult

A Postdoc Perspective: National Academies Review, continued

to swallow for effete postdocs, fresh out of academia, leaping like lepidopterists at scientific butterflies. According to the report, operational formality creates a "bias against experimental work, because of the onerous processes sometimes required before running an experiment." Experiments typically involve more complex apparatus and materials than simply the pencils and paper that are a theorist's weapons of math destruction. In this regard, the NAS report recommends that Congress, the NNSA, and Lab management commit to reestablishing trust and recognize that safety and security have been strengthened to that point that they no longer require special consideration.

Another management issue addressed by the NAS report is the increased private sector management fee paid to LLNS, LLC. That fee is currently $40 million, which is about four times as much as the fee charged by the University of California in 2006, the last full year when it ran the Lab. At first glance this might seem to be a serious downside to having "re-competed" the management contracts for the Lab. However, according to the NAS report, the increase in management fees, which is about 3% of the total lab budget, is far less of a problem than the "breakdown of trust" between the Lab and the NNSA. Nevertheless, higher management fees have turned out to be an oft-mentioned scapegoat—some Lab employees groused to the NAS study committee that higher fees have caused the quality of Lab science to suffer. However, when the NAS committee asked Lab employees for specific examples of deleterious effects, during site visits and otherwise, none were provided. Additional costs associated with privatization, such as higher taxes and more costly employee retirement and health plans, are also detailed in the report.

The NAS report was very flattering when it came to the subject of postdocs. The quality of postdocs is on the rise and the Lab needs to do all it can to attract young, energetic researchers. Of course, one of the keys to attracting top postdocs—like bees to honey—is compelling science. One significant factor contributing to the Lab's ability to do compelling and attractive science is the Lab Directed Research and Development (LDRD) program. This program also serves as a major resource for training and placing postdocs into staff scientist positions. The NAS report strongly recommends maintaining support for the LDRD program as an essential component of attracting and retaining high-quality staff at the Lab.

So, what does it matter if the NAS asks Congress to support the LDRD program? What does it matter if the NAS recommends a decrease in operational formality? Will these recommendations, and others detailed in the NAS report, come to pass? And will any changes, whether good or bad, be implemented within a timeframe relevant to you as a postdoc at the lab? Of course, I don't have the answer to this question… Large organizations tend to have significant organizational inertia when it comes to making changes. On the other hand, we know that the appearance of lax security at the national labs circa 2000 produced profound changes in lab operations in a relatively short time. Implementing the changes detailed in the NAS report would probably be in the best interest of postdocs at the Lab, but due to the intrinsic uncertainly of institutional action, it is difficult to predict a timeframe for change to take place.

1. http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_reports&docid=f:hr288.111
2. http://www.nap.edu/catalog.php?record_id=13367
3. https://pao-int.llnl.gov/news/morenews/2012/Feb/021612_nas.html
4. http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=13367

Judges Needed for the Alameda County Science & Engineering Fair

The Alameda County Science and Engineering Fair (ACSEF) needs judges to participate from 7 a.m. to 2 p.m. on Wednesday, March 21 at Chabot College in Hayward. Lunch will be provided. This is an opportunity for postdocs to serve as role models for budding schoolchildren scientists. As a judge you will get to know the students, review and rank their projects and promote science careers. This is the first year of the ACSEF. More info is online at www.acsef.org/judgeregistration.html
Postdocs who are interested in being a judge should check with their mentors first.

Next Steps: Interviews with Former Postdocs

Where do you work now and how is that similar or different from what you did as a Post-Doc?

Sarah Nelson Wilk: Right now I am in the middle of the Christine Mirzayan Science and Technology Policy Fellowship Program with the National Academies of Science in Washington DC. This is very different than laboratory research. I am attending Congressional hearings, participating in policy-related professional development exercises such as how to write a policy brief, and helping my board (the Board on Physics and Astronomy) on a few reports in-progress. After my fellowship ends I will be starting as an IPA (interpersonnel agreement) with Pacific Northwest National Laboratory (PNNL) at the Defense Threat Reduction Agency (DTRA), working with program managers in their Basic Research division.

Did you apply elsewhere? Why did you make this particular choice?

I applied for quite a few positions in the Washington DC area, such as the Nuclear Regulatory Commission, the State Department, and the National Science Foundation. I chose the fellowship first because it is a program for early career scientists (those within five years post-degree) and my eligibility would soon expire. I chose the PNNL/DTRA position because I would like to learn more about program management and the grant process while keeping on top of cutting-edge science.

What did you enjoy the most and the least about being a postdoc at LLNL? What do you think are the differences between a postdoc at the lab versus at a university?

During my postdoc at LLNL, I most enjoyed the ability to find an expert on anything by just asking a few people about a particular topic. And, if that expert wasn't on-site, someone knew exactly where to find them and they usually had an email address handy.

Managing the challenges and expectations of working almost exclusively on programmatic research and having a clearance early on, yet only being a postdoc and being held to "academic" goals that the programs do not necessarily share was certainly the most difficult aspect of my time as a postdoc at LLNL.

Having done all of my grad school and postdoc research at national labs, I don't think I can fairly comment on what being a postdoc at a university is like. I do know from my friends who have done university postdocs that the labs pay much better and there is a lot less paperwork and bureaucracy at the universities. Every employer has pros and cons so you'd have to weigh what is most important to you in choosing where you'd like to work.

How far along your postdoc were you when you decided what the next step in your career would be?

Approximately halfway. I knew that I enjoyed networking, giving presentations, and informing others outside my field about the work I was doing. In graduate school I was also curious about science policy. When I learned that my now-husband was offered a position in the DC area working for the DOE, I started looking into advisory and policy-based positions, including fellowships like the one I have now.

Can you describe the application and interview process? How did you get your new job? What do you think your employer valued the most in your formation and experience?

The road to getting this job was lengthy, and began with a conversation at a workshop social hour about my future transition to DC. That led to some informal phone calls with PNNL staff who needed someone with my skills, and they directed me to a job posting online. I visited PNNL for a sunrise to sunset interview day including lab tours, a panel interview, a one hour job talk, and smaller group interviews. About six weeks later I was asked to fly to DTRA to interview with their staff, and a few months later I was officially offered the position. This process took about nine months, but I suspect that was largely due to the complications of multiple organizations and numerous approvals for this non-standard situation, since typically IPAs are sent to agencies by their "home" lab, and I was not an existing PNNL employee.

I think my employers value my scientific breadth

Next Steps: Interviews with Former Postdocs, continued

most. My undergraduate research was focused on materials science, my graduate work on nuclear chemistry, and my LLNL postdoc was split between NIF diagnostics work and neutron physics. Having a clearance was also a huge selling point for my future employer, and I suspect that I would not have been considered for the job without it. During the panel interview, which was the most stressful part of my interview day, I found that honesty and a positive attitude even while answering questions like "What is your biggest flaw?" were well-received.

Any piece of advice for postdocs at LLNL?

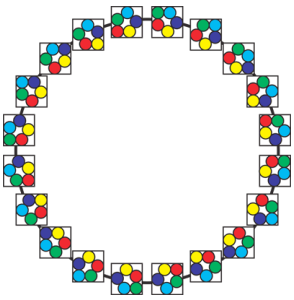
Why yes, I have a few: make and use your connections, because most of job-hunting is really about who you know (whether you like it or not). Be selfish when it comes to your career, trust your gut, and remember that the best advocate for you is *you*.

Postdoc-Related Highlights from Notes to the Director

Two recent papers by Jeremy Mason highlighted on journal websites

Jeremy Mason, a LLNL postdoc has had two of his recent papers highlighted by the journals in which they appeared. The first paper provides an explanation for the Law of Aboav–Weaire, which is a simple mathematical expression derived from the empirical observation that in both 2- and 3- dimensional aggregates of grains, grains with a small number of sides tended to be surrounded by grains with a large number of sides, and vice versa. Mason's paper provides an exact derivation of the mathematical form of the Law and establishes a connection between the number of faces of a grain and the total Gaussian curvature contained in the faces and the edges of that grain. This paper was featured in a new article in the "Insights" section of the Journal of Physics A: Mathematical and Theoretical website.

The second featured paper discusses the complexities of the topology of packing of disks in two dimensions, and was selected for the January 2012 "Kaleidoscope" section of the Physical Review E website, which is devoted to the presentation of scientifically meaningful and visually pleasing images. The configuration space of hard disks is not known explicitly but is important to many questions in statistical mechanics, including the solid-liquid melting transition. Even when the number of disks is small, the topology of the possible configuration spaces is complex, and not well understood. Mason and his coauthors from Stanford University and the Institute for Advanced Study in Princeton studied the configuration space for five disks in the unit square using novel computational techniques, and showed that that mechanically-balanced (or jammed) configurations act as "critical points," indicating the only places where the topology can change.



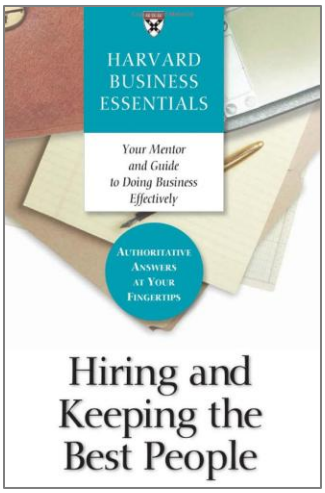
Expanding Your Horizons Conference

More than 300 local girls in grades 6-9 participated in the long-running "Tri-Valley Expanding Your Horizons" (EYH) conference whose goal is to spark girls' interest in science, technology engineering and math careers, held on February 25 at the Diablo Valley College, San Ramon. Lab Director Parney Albright was among a group of visitors, including local elected officials, lab managers, and education and community leaders who toured the workshops, and spoke with students and presenters. The day also featured 15 workshops, several provided by LLNL scientists, including: Modern Alchemy -- How Livermorium Came To Be, presented by Nancy Stoyer; Green Power, by **Sonia Wharton** (former postdoc), PC maintenance and repair, by Merry Carter; the Physics of Angry Birds, by Tom Luu; and Amazing Every-Day Chemistry, by Carolyn Koester and Fowzia Zaka. "We are happy that the conference was a success again this year," Susan Springer, EYH co-chair said. NIF&PS volunteer **Félicie Albert** (former postdoc) shown above with young EYH participants.

Professional & Career Development

Give yourself an interview, before someone else does. What will you say in your next job interview? Whether converting inside of LLNL or looking elsewhere, every postdoc will need another job eventually, and most of those will have interviews of one type or another. The book "Hiring and Keeping the Best People," from the Harvard Business School Press, is loaded with typical interview questions that evaluate the skills, style, aspirations, and results of a prospective candidate.

I found it to be a useful exercise to give myself a "self-interview," writing down responses to some key questions and working on them until they truly captured what I wanted to say. It's hard! Better to struggle with it early than during a real interview.
—Nathan Kugland
Read this book for free online through U-Learn.
https://ulearnfe.llnl.gov/?src=sksft&assetid=5485



Upcoming Events

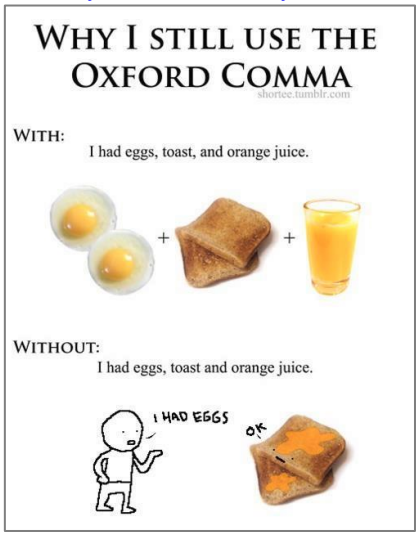
Postdoc Brown Bag Seminar: Tech Start-Ups
Wednesday, March 21st, 12 – 1:15 PM
LVOC High Performance Computing Innovation Center, Yosemite Room 1115. "The Adventure Of Spinning Technology Out Of The Laboratory"

Postdoc Lunch at Sai's Vietnamese
Friday, March 23rd, 12:30 PM
961 Bluebell Drive, Livermore — hosted by Andre Schleife

Work-Life Booksigning & Speaker
Thursday, March 29, 11:15 AM (booksigning) 12 PM (talk)
"Perception, Visibility and Influence" to take control of your future and advance your career, by Joel Garfinkle
B123 Auditorium (no registration required).

In Other News…

www.nowthatsnifty.com/2012/01/why-i-use-oxford-comma.html



2011 International Science & Engineering Visualization Challenge

Hosted by Science Magazine and the National Science Foundation, this contest brings out the beautiful in data. "The 2011 Challenge received over 200 submissions in five categories, which were evaluated based on visual impact, effective communication of a scientific idea, and overall originality." http://www.sciencemag.org/site/special/vis2011/
—Nathan Kugland

Notes from the Postdoc Association Council Meeting on February 1st, 2012

Start 12:00 PM, B543 Grand Canyon Room.

Attendees: David Alessi, Nick Be, Abhinav Bhatele, Nathan Kugland, Eric Wang, Adam Sorini, Charles Reid, Lance Simms, Mandoye Ndoye, Julia Vogel, Kris Kulp, Christine Zachow, Andre Schleife, Kirsten Howley, David Martinez.

1. Newsletter update. Nathan reported that the Paper/Work newsletter continues to do well. Two types of help needed: for exit interviews and higher-up interviews. David Alessi, Adam Sorini, and David Martinez offered to help out here. Also, hopefully Abhinav can provide general reports from the IPPB meetings.

2. Big postdoc event. The "bad movie night" should be a lot of fun; will rent out a local theater. Cost is roughly $1200. Could bring experts from the lab to comment on the bad science (although perhaps not necessary). Early-mid April seems like a realistic time; some preferred the 2nd week in April.

3. Postdoc T-shirt contest entry deadline Saturday 3/10. Many good designs were received. Lance will run the voting.

4. Abhinav gave an update on progress with the web site. He can now make changes (e.g. post handbook and newsletters). Much work remains to be done to unify and harmonize the postdoc web sites across the Lab. GS and WCI have no postdoc pages, for example. Abhinav will start by linking to all other postdoc web sites from the main postdoc web site. A new template is proposed; this has an easy text-edit system for making small changes. The Lab has promised to make a new look-and-feel across all web sites in about a year, so we shouldn't spend too much time on the template. Kris said that there will be no staff support for web changes. Charles Reid and Mandoye will help get the handbook online in an easy to read HTML format. Abhinav will make a site map and prototype to get started with the reorganization of the postdoc pages. We should also find a central server on which to store our LLPA files, such as event photos.

5. Lance promoted amending our existing mission statement to embrace broader goals such as developing leadership and planning social events.

6. Next happy hour and lunch. Andre and Kirsten will be the social committee, and will organize these regular events in the future.

7. Brown bag ideas. Parney would be good; Tomas is tentatively scheduled for late April; "How to develop an LDRD budget" is scheduled for early April. Also would be fun to have the "former cold warriors" speak, maybe along with the Lab historian. One problem is that we need a bigger venue where we can eat. Most auditoriums don't permit food. Julia Vogel will help Christine with the next event.

8. New offices and committees. Lance proposed organizing the new committees to clearly state who does what. Lance and Nathan will work on roles and responsibilities document then distribute for comments. (Editor's note: the new teams are reflected in our list of active participants below.)

End 1:00 PM

Comments/Suggestions/Praise/Complaints? Your Participation is Welcome!

Do you have feedback about this newsletter, or perhaps ideas for how to make things better around the Lab? What do *you* want from your Postdoc Association? Let us know! Send comments or questions to the Editor (Nathan Kugland, kugland1@llnl.gov). We'll do our best to incorporate your advice or pass it along to the relevant decision makers.

LLNL Postdoc Association Leadership Council and Teams

President Lance Simms
Vice President Nathan Kugland
Handbook Editor Mandoye Ndoye
Newsletter Team
Nathan Kugland, David Alessi, Adam Sorini, David Martinez
Web Team: Abhinav Bhatele, Charles Reid, Mandoye Ndoye
Social Events Team: Kirsten Howley, Andre Schleife
Career Development Team: Nick Be
Participating Councilmembers:
Liam Stanton, Eric Wang, Heather Whitley
LLNL Postdoc Advisory Committee Staff Representatives
Kris Kulp, Christine Zachow